PEPTIDES

Small chains of amino acids linked by peptide bonds. They play vital roles in the body and in science.

1. What are Peptides?

- Peptides are short chains of amino acids.
- Amino acids are connected by peptide bonds.
- They can contain 2 to 50 amino acids.
- Naturally occurring peptides are involved in many biological functions.
- Peptides can also be synthetically made for research and therapeutic use.

2. Types of Peptides

By Length

- Dipeptides (2 amino acids)
- Tripeptides (3 amino acids)
- Oligopeptides (2–10 amino acids)
- Polypeptides (11–50 amino acids)

By Structure

- Linear Peptides – Straight chain
- Cyclic Peptides – Form a ring structure

By Composition

- Homopeptides – Made of same amino acids
- Heteropeptides – Made of different amino acids

By Source

- Natural Peptides – From plants, animals, microbes
- Synthetic Peptides – Lab-made for specific purposes

3. Research Applications

Drug Discovery & Development

Peptides are used to design new drugs for diseases like cancer, diabetes, infections, and more.

Targeted Therapy

Peptides can target specific cells or molecules, improving treatment accuracy and reducing side effects.

Immunology

Peptides help in studying immune responses and in developing vaccines and immunotherapies.

Biomarkers

Peptides are used as biomarkers to diagnose diseases or monitor treatment effectiveness.

Protein & Enzyme Research

Peptides help in studying protein functions, enzyme activity, and protein interactions.

Agriculture & Biotechnology

Peptides are used in plant growth promotion, pest resistance, and improving crop yields.

Peptides are powerful tools in research and medicine, with endless potential for innovation.